WHAT IS CLAIMED IS

1. A semiconductor light emitter, comprising:

a quantum well active layer which includes nitrogen and at least one other Group-V element; and

barrier layers which are provided alongside said quantum well active layer, wherein said quantum well active layer and said barrier layers together constitute an active layer,

wherein said barrier layers are formed of a Group-III-V mixed-crystal semiconductor that includes nitrogen and at least one other Group-V element, a nitrogen composition thereof being smaller than that of said quantum well active layer.

2. The semiconductor light emitter as claimed in claim 1, wherein said barrier layers further include phosphorus.

3. The semiconductor light emitter as claimed in claim 1, wherein said barrier layers are one of GaNAs, GaNPAs, GaInNAs, GaInNPAs, GaNAsSb, GaNPAsSb, GaInNAsSb, and GaInNPAsSb.

4. A semiconductor light emitter, comprising:

a quantum well active layer which includes nitrogen and at least one other Group-V element;

barrier layers which are provided alongside said quantum well active layer, wherein said quantum well active layer and said barrier layers together constitute one active layer;

upper and lower reflectors which are respectively provided on upper and lower sides of said one active layer, wherein said one active layer and said upper and lower reflectors together constitute a resonator structure;

a GaAs substrate on which said resonator structure is formed; and

spacer layers which are provided between said upper and lower reflectors and said one active layer,

wherein said barrier layers are formed of a Group-III-V mixed-crystal semiconductor that includes nitrogen and at least one other Group-V element, and said spacer layers are mainly formed of a material having a larger band gap than GaAs.

5. The semiconductor light emitter as claimed in claim 4, wherein said material having a larger band gap than GaAs is one of GaInPAs and AlGaAs.

6. The semiconductor light emitter as claimed in claim 1, wherein said semiconductor light emitter is a surface emitting semiconductor laser.

7. The semiconductor light emitter as claimed in claim 4, wherein said semiconductor light emitter is a surface emitting semiconductor laser.

8. An optical transmission module, comprising the semiconductor light emitter of claim 6 serving as a light source.

9. An optical transmission module, comprising the semiconductor light emitter of claim 7 serving as a light source.

10. An optical transceiver module, comprising the semiconductor light emitter of claim 6 serving as a light source.

11. An optical transceiver module, comprising the semiconductor light emitter of claim 7 serving as a light source.

12. An optical communication system, comprising the semiconductor light emitter of claim 6 serving as a light source.

13. An optical communication system, comprising the semiconductor light emitter of claim 7 serving as a light source.

14. A method of making a semiconductor light emitter, said semiconductor light emitter including a quantum well active layer which includes nitrogen and at least one other Group-V element, and barrier layers which are provided alongside said quantum well active layer, wherein said quantum well active layer and said barrier layers together constitute an active layer, wherein said barrier layers are formed of a Group-III-V mixed-crystal semiconductor that includes nitrogen and at least one other Group-V element, a nitrogen composition thereof being smaller than that of said quantum well active layer, said method comprising the steps of:

providing a plurality of Ga raw material cells in a molecular beam epitaxy apparatus; and

growing the quantum well active layer and the barrier layers by use of the respective Ga raw material cells, an amount of Ga supply of the cell used for growing the quantum well active layer being smaller than an amount of Ga supply of the cell used for growing the barrier layers.

15. A semiconductor light emitter, comprising:

a GaAs substrate; and

an active region which is grown on said GaAs substrate, wherein said active region comprises:

a quantum well active layer which is made of a mixed-crystal semiconductor having a compressive strain and containing nitrogen and at least one other Group-V element; and

a strain-compensated layer which is situated alongside said quantum well active layer, and has a multi-layer structure that includes a first layer containing nitrogen and having a lower conduction band than GaAs and a second layer with a tensile strain including phosphorous and having a higher conduction band than GaAs, said first layer being situated closer to said quantum well active layer than said second layer.

16. The semiconductor light emitter as claimed in claim 15, wherein said quantum well active layer is a multiple quantum well active layer.

17. The semiconductor light emitter as claimed in claim 15, wherein said first layer has a tensile strain relative to GaAs.

18. The semiconductor light emitter as claimed in claim 15, wherein said quantum well active layer is a multiple quantum well active layer including a plurality of quantum well active layers and barrier layers between said quantum well active layers, said barrier layers including either phosphorous or nitrogen and having a tensile strain

19. The semiconductor light emitter as claimed in claim 18, wherein the tensile strain of said second layer is larger than the tensile strain of said barrier layers.

20. The semiconductor light emitter as claimed in claim 15, wherein said multi-layer structure further includes an incremental-composition layer in which a strain continuously changes.

21. The semiconductor light emitter as claimed in claim 15, wherein said second layer is a GaAsP layer, and said first layer is a GaAsN layer, a GaAsP composition of said GaAsP layer being $GaAs_{(1-x)}P_x$ $(0<x\leq 0.2)$, and the GaAsN layer situated next said quantum well active layer having a thickness of 1 nm or more.

22. The semiconductor light emitter as claimed in claim 15, wherein said semiconductor light emitter is a surface emitting semiconductor laser.

23. An optical transmission module, comprising the semiconductor light emitter of claim 15 serving as a light source.

24. An optical communication system, comprising the optical transmission module of claim 23 serving as an optical transmission module.

25. A quantum well structure, comprising:

a quantum well layer which includes In and nitrogen and at least one other Group-V element and has a compressive strain; and

barrier layers which are provided on upper and lower sides of said quantum well layer, wherein each of said barrier layers includes a layer including In and phosphorous and situated alongside said quantum well layer and a layer having a tensile strain.

26. A semiconductor light emitter, comprising:

a quantum well layer which includes In and nitrogen and at least one other Group-V element and has a compressive strain; and

barrier layers which are provided on upper and lower sides of said quantum well layer, wherein said quantum well layer and said barrier layers together constitute a quantum well structure serving as an active layer, and each of said barrier layers

includes a layer including In and phosphorous and situated alongside said quantum well layer and a layer having a tensile strain.

27. The semiconductor light emitter as claimed in claim 26, wherein the layer including In and phosphorous and situated alongside said quantum well layer has band gap energy that is lower than or equal to that of GaAs.

28. The semiconductor light emitter as claimed in claim 26, wherein the layer including In and phosphorous and situated alongside said quantum well layer has a strain of ±0.1% or less.

29. The semiconductor light emitter as

claimed in claim 26, wherein each of said barrier layers includes an incremental composition layer.

30. The semiconductor light emitter as claimed in claim 26, wherein the active layer has a multiple quantum well structure.

31. The semiconductor light emitter as claimed in claim 26, wherein said semiconductor light emitter is a surface emitting semiconductor laser.

32. The semiconductor light emitter as claimed in claim 26, wherein the layer including In and phosphorous and situated alongside said quantum well layer is made of GaInAsP.

33. An optical transmission module, comprising the semiconductor light emitter of claim 26.

34. An optical transmission system, comprising the optical transmission module of claim 33.

35. A semiconductor light emitter, comprising:

a GaAs substrate;

a quantum well active layer which includes nitrogen and at least one other Group-V element, and has a compressive strain relative to said GaAs substrate; and

barrier layers which are provided alongside said quantum well active layer, wherein said quantum well active layer and said barrier layers together constitute an active layer,

wherein said barrier layers are formed of a Group-III-V mixed-crystal semiconductor that includes antimony, and said quantum well active layer does not include antimony.

36. The semiconductor light emitter as claimed in claim 35, wherein said barrier layers further include nitrogen.

37. A semiconductor light emitter, comprising:

a GaAs substrate;

a quantum well active layer which includes nitrogen and at least one other Group-V element, and has a compressive strain relative to said GaAs

substrate; and

barrier layers which are provided alongside said quantum well active layer, wherein said quantum well active layer and said barrier layers together constitute an active layer,

wherein said barrier layers are formed of a Group-III-V mixed-crystal semiconductor that includes antimony and nitrogen, and said quantum well active layer has no or some concentration of antimony smaller than an antimony concentration of said barrier layers and has an nitrogen concentration larger than that of said barrier layers.

38. The semiconductor light emitter as claimed in claim 35, wherein said barrier layers are formed of GaAsSb, GaNAsSb, GaInNAsSb, GaNPAsSb, GaPAsSb, GaInNPAsSb, GaInPAsSb, or GaInAsSb.

39. The semiconductor light emitter as claimed in claim 37, wherein said barrier layers are formed of GaAsSb, GaNAsSb, GaInNAsSb, GaNPAsSb, GaPAsSb, GaInNPAsSb, GaInPAsSb, or GaInAsSb.

40. The semiconductor light emitter as claimed in claim 35, wherein said barrier layers including antimony have a tensile strain relative to said GaAs substrate.

41. The semiconductor light emitter as claimed in claim 37, wherein said barrier layers including antimony have a tensile strain relative to said GaAs substrate.

42. A semiconductor light emitter,

comprising:

a GaAs substrate;

a quantum well active layer which includes nitrogen and at least one other Group-V element, and has a compressive strain relative to said GaAs substrate;

barrier layers which are provided around said quantum well active layer; and

an intermediate layer which is provided between said quantum well active layer and said barrier layers, and is formed of a Group-III-V mixed-crystal semiconductor that includes antimony.

43. The semiconductor light emitter as claimed in claim 42, wherein said intermediate layer is formed of GaAsSb, GaNAsSb, GaInNAsSb, GaNPAsSb, GaPAsSb, GaInNPAsSb, GaInPAsSb, or GaInAsSb.

44. The semiconductor light emitter as

claimed in claim 42, wherein said barrier layers have a tensile strain relative to said GaAs substrate, and said intermediate layer including antimony has a lattice constant that is larger than that of said barrier layers and smaller than that of said quantum well active layer.

45. A semiconductor light emitter, comprising a quantum well active layer which includes nitrogen and at least one other Group-V element, wherein said quantum well active layer is comprised of first layers and second layers stacked one over the other in cyclic arrangement, said first layers including In, Sb, and at least one other Group-V element, and said second layers including no or some In composition smaller than that of the first layers, N, and at least one other Group-V element.

46. The semiconductor light emitter as claimed in claim 45, wherein said first layers are GaInAsSb, and said second layers are GaNAs.

47. A method of producing the semiconductor light emitter as claimed in claim 35, wherein at least the active layer is formed through crystal growth by an MOCVD method.

48. The semiconductor light emitter as claimed in claim 35, wherein said semiconductor light emitter is a surface emitting semiconductor layer.

49. An optical transmission module, comprising the semiconductor light emitter of claim

48 serving as a light source.

50. An optical transceiver module, comprising the semiconductor light emitter of claim 48 serving as a light source.

51. An optical communication system, comprising the semiconductor light emitter of claim 48 serving as a light source.

52. A method of producing the semiconductor light emitter as claimed in claim 37, wherein at least the active layer is formed through crystal growth by an MOCVD method.

53. The semiconductor light emitter as claimed in claim 37, wherein said semiconductor light emitter is a surface emitting semiconductor layer.

54. An optical transmission module, comprising the semiconductor light emitter of claim 53 serving as a light source.

55. An optical transceiver module, comprising the semiconductor light emitter of claim 53 serving as a light source.

56. An optical communication system,

comprising the semiconductor light emitter of claim 53 serving as a light source.

57. A method of producing the semiconductor light emitter as claimed in claim 42, wherein at least the active layer is formed through crystal growth by an MOCVD method.

58. The semiconductor light emitter as claimed in claim 42, wherein said semiconductor light emitter is a surface emitting semiconductor layer.

59. An optical transmission module, comprising the semiconductor light emitter of claim 58 serving as a light source.

60. An optical transceiver module, comprising the semiconductor light emitter of claim 58 serving as a light source.

61. An optical communication system, comprising the semiconductor light emitter of claim 58 serving as a light source.

62. A semiconductor light emitter, comprising:

a GaAs substrate;

a quantum well active layer which includes nitrogen and at least one other Group-V element, and has a compressive strain relative to said GaAs substrate; and

barrier layers which are provided alongside said quantum well active layer, wherein said quantum well active layer and said barrier layers together constitute an active layer,

wherein said barrier layers are formed of a Group-III-V mixed-crystal semiconductor that includes both phosphorous and antimony.

63. The semiconductor light emitter as claimed in claim 62, wherein said barrier layers further include nitrogen.

64. The semiconductor light emitter as claimed in claim 62, wherein said barrier layers are GaNPAsSb, GaPAsSb, GaInNPAsSb, or GaInPAsSb.

65. A semiconductor light emitter, comprising:

a GaAs substrate;

a quantum well active layer which includes Ga, As, and Sb, and has a compressive strain relative to said GaAs substrate; and

barrier layers which are provided alongside said quantum well active layer, wherein said quantum well active layer and said barrier layers together constitute an active layer,

wherein said barrier layers are formed of a Group-III-V mixed-crystal semiconductor that includes both phosphorous and antimony.

66. The semiconductor light emitter as claimed in claim 65, wherein said barrier layers are GaPAsSb, AlGaPAsSb, GaInPAsSb, or AlGaInPAsSb.

67. The semiconductor light emitter as

claimed in claim 62, wherein said quantum well active layer is a multiple quantum well active layer.

68. The semiconductor light emitter as claimed in claim 65, wherein said quantum well active layer is a multiple quantum well active layer.

69. The semiconductor light emitter as claimed in claim 62, wherein said semiconductor light emitter is a surface emitting semiconductor laser.

70. The semiconductor light emitter as claimed in claim 65, wherein said semiconductor light emitter is a surface emitting semiconductor laser.

71. An optical transmission module, comprising the semiconductor light emitter of claim 69 serving as a light source.

72. An optical transmission module, comprising the semiconductor light emitter of claim 70 serving as a light source.

73. An optical transceiver module, comprising the semiconductor light emitter of claim 69 serving as a light source.

74. An optical transceiver module, comprising the semiconductor light emitter of claim 70 serving as a light source.

75. An optical communication system, comprising the semiconductor light emitter of claim 69 serving as a light source.

76. An optical communication system, comprising the semiconductor light emitter of claim 70 serving as a light source.

77. A semiconductor laser, comprising:

well layers; and

barrier layers, wherein said well layers and said barrier layers are stacked one over the

other to form an active layer having a multiple quantum well structure, said barrier layers being made of a mixed-crystal semiconductor including nitrogen and at least one other Group-V element, said barrier layers including p-type impurity doped at concentration ranging from $1x10^{17}$ cm^{-3} to $1x10^{19}$ cm^{-3}.

78. The semiconductor laser as claimed in claim 77, wherein the p-type impurity is carbon.

79. The semiconductor laser as claimed in claim 77, wherein a doping concentration of the p-type impurity in one of said barrier layers is lower in a region adjoining one of said well layers than in a region separated from said well layers.

80. The semiconductor laser as claimed in claim 77, wherein said well layers and said barrier layers have opposite strains.

81. The semiconductor laser as claimed in claim 77, wherein said well layers are made of a mixed-crystal semiconductor including nitrogen and at least one other Group-V element.

82. The semiconductor laser as claimed in claim 77, further comprising a resonator structure having a pair of multi-layered reflectors at opposite ends, said resonator structure including said active layer, and said semiconductor laser being a surface emitting semiconductor laser.

83. A method of making the semiconductor laser of claim 77, comprising a step of doping carbon in the barrier layers by use of an organic nitrogen raw material.

84. An optical transmission module, comprising the semiconductor laser of claim 77.

85. An optical transmission system, comprising the optical transmission module of claim 84.